Notice of Allowability	Application No.	Applicant(s)	
	10/511,514	PESSOLANO, FRANCESCO	
	Examiner	Art Unit	
	JASON MITCHELL	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *an amendment filed 11/3/09*.

2. ☒ The allowed claim(s) is/are *1-2,6-15,18-25 (renumbered 1-20)*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20100308* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Jason Mitchell/
Primary Examiner, Art Unit 2193

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with G. Thorn on 3/12/10.

The application has been amended as follows:

1. (Currently Amended) A method for processing an information based on a sequence of instructions in an apparatus for data processing comprising a processor, said method comprising the acts of:

detecting a repeated sub-sequence in said sequence of instructions by the apparatus for data processing;

~~detecting~~ determining a number of external processing units connected to ports of the apparatus, the external processing units being external to the apparatus;

providing an index information indicating ~~the~~ a repetition ~~frequency~~ rate of said repeated sub-sequence, wherein said index information comprises an integer number set in proportion with a ranking of ~~said~~ the repetition rate of said repeated sub-sequence compared to the repetition rate of other detected repeated sub-sequences; and

determining an allocation between the external processing units and said repeated sub-sequence based on said index information;

wherein said allocation is determined by comparing said integer number with the number of the external processing units, and wherein all repeated sub-sequences for which said integer number is smaller than said number of the external processing units are allocated to a selected processing unit.

4. (Canceled)

5. (Canceled)

12. (Currently Amended) An apparatus for processing an information based on a sequence of instructions, said apparatus comprising a processor configured to:

detect a repeated sub-sequence in said sequence of instructions, and for providing an index information indicating ~~the~~ a repetition ~~frequency~~ rate of said repeated sub-sequence, wherein said index information comprises an integer number set in proportion with a ranking of ~~said~~ the repetition rate of said repeated sub-sequence compared to the repetition rate of other detected repeated sub-sequences;

determine a number of external processing units connected to ports of the apparatus, the external processing units being external to the apparatus; and

allocate said repeated sub-sequence to a processing ~~resource~~ unit based on said index information by comparing said integer number with the number of the external processing units;

wherein all repeated sub-sequences for which said integer number is smaller than the number of the external processing units are allocated to a selected processing unit.

13. (Canceled)

14.(Currently Amended) The apparatus of ~~claim 13~~ claim 12, further comprising a memory table for storing an allocation information indicating an allocation between said ~~at least one~~ external processing ~~unit~~ units and corresponding repeated sub-sequences.

15.(Currently Amended) The apparatus of ~~claim 13~~ claim 12, wherein said apparatus is a digital signal processor and said ~~at least one~~ external processing units are processor cores and/or configurable logic blocks.

16. (Canceled)

17. (Canceled)

18.(Currently Amended) A compiler stored on a computer readable medium, the compiler for providing an output sequence of instructions to be used for processing an information in an apparatus for data processing, said compiler being arranged to:

detect a repeated sub-sequence in said output sequence of instructions ~~and to~~ ;

provide an index information indicating ~~the~~ a repetition ~~frequency~~ rate of said repeated sub-sequence, wherein said index information comprises an integer number set in proportion with a ranking of ~~said~~ the repetition rate of said repeated sub-sequence compared to the repetition rate of other detected repeated sub-sequences;

determine a number of external processing units connected to ports of the apparatus, the external processing units being external to the apparatus; and

allocate said repeated sub-sequence to a processing unit based on said index information by comparing said integer number with the number of the external processing units;

wherein all repeated sub-sequences for which said integer number is smaller than the number of the external processing units are allocated to a selected processing unit.

19.(Currently Amended) A compiler stored on a computer readable medium, the compiler for providing an output sequence of instructions to be used for processing an information in an apparatus for data processing, said compiler being arranged to:

detect a repeated sub-sequence in said output sequence of instructions and to provide an index information indicating ~~the~~ a repetition frequency of said repeated ~~sub-sequence, wherein said compiler is arranged to~~ sub-sequence;

determine a number of external processing units connected to ports of the apparatus, the external processing units being external to the apparatus;

allocate said repeated sub-sequence to a processing unit based on said index information by comparing said integer number with the number of the external processing units;

wherein all repeated sub-sequences for which said integer number is smaller than the number of the external processing units are allocated to a selected processing unit; and

add to said repeated sub-sequence an additional instruction specifying said index information.

21.(Currently Amended) A compiler stored on a computer readable medium, the compiler for providing an output sequence of instructions to be used for processing an information in an apparatus for data processing, said compiler being arranged to:

detect a repeated sub-sequence in said output sequence of instructions ~~and to~~;

provide an index information indicating ~~the~~ a repetition frequency of said repeated sub-sequence, wherein said ~~compiler is arranged to~~ index information comprises an integer number set in proportion with a ranking of the repetition rate of said repeated sub-sequence compared to the repetition rate of other detected repeated sub-sequences;

determine a number of external processing units connected to ports of the apparatus, the external processing units being external to the apparatus;

allocate said repeated sub-sequence to a processing unit based on said index information by comparing said integer number with the number of the external processing units;

wherein all repeated sub-sequences for which said integer number is smaller than the number of the external processing units are allocated to a selected processing unit; and

add to said output sequence an instruction for indicating that said repeated sub-sequence is not used anymore.

All other claims are unchanged.

The following is an examiner's statement of reasons for allowance:

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

The closest prior art (US 5,752,035 to Trimberger) discloses or suggests processing an information based on a sequence of instructions comprising the acts of: detecting a repeated sub-sequence in said sequence of instructions (col. 14, lines 65-67); providing an index information indicating a repetition rate of said repeated sub-sequence, wherein said index information comprises an integer number set in proportion with a ranking of the repetition rate of said repeated sub-sequence compared

to the repetition rate of other detected repeated sub-sequences (col. 15, liens 15-18; col. 15, lines 29-41); and determining an allocation between processing units and said repeated sub-sequence based on said index information (col. 15, lines 19-23).

The prior art (see e.g. US 6,044,225 to Spencer et al; US 5,497,373 to Hulen et al) further discloses or suggests detecting external processing units of the apparatus (Hulen Fig. 4(b) step 78; col. 9, lines 1-4 "The CPU 48 identifies the appropriate DSPs/service ports"; and Spencer Fig. 1a-b note that DSPs 32 & 36 are connected to Host Processor 12 through PCI Bus 20).

The prior art does not disclose or suggest determining a number of external processing units connected to ports of the apparatus, the external processing units being external to the apparatus; wherein said allocation is determined by comparing said integer number with the number of the external processing units, and wherein all repeated sub-sequences for which said integer number is smaller than said number of the external processing units are allocated to a selected processing unit.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON MITCHELL whose telephone number is (571)272-3728. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bullock Lewis can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Mitchell/
Primary Examiner, Art Unit 2193